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■ Precautions for Safe Use of the Instrument

When handling the instrument, ALWAYS observe all of the cautionary notes on safety given below. Yokogawa M&C Corporation is not at all liable for damage resulting from misuse of this product by the user that is contrary to these cautionary notes.

Various symbols are used on the instrument and in this manual to ensure the product is used safely and to protect operators and property from possible hazards or damage. The following safety symbols are used where appropriate. Read the explanations carefully and familiarize yourself with the symbols before reading the text.

The instrument and this manual use the following safety symbols:

Danger! Handle with Care.

This symbol indicates that the operator must refer to an explanation in the User's Manual in order to avoid the risk of personal injury or death and/or damage to the instrument.

Double Insulation

This symbol indicates double insulation.

AC Voltage/Current

This symbol indicates AC voltage or current.

Ground

This symbol indicates ground (earth).

WARNING

Indicates that there is a possibility of serious personal injury or loss of life if the operating procedure is not followed correctly and describes the precautions for avoiding such injury or loss of life.

CAUTION

Indicates that there is a possibility of serious personal injury or damage to the instrument if the operating procedure is not followed correctly and describes the precautions for avoiding such injury or damage.

NOTE

Draws attention to information essential for understanding the operation and features.

WARNING

- Never make measurement on a circuit above 600V AC.
- Do not use the instrument in an atmosphere where any flammable or explosive gas is present.
- The transformer jaws are made of metal and their tips are not insulated. Be especially careful about the hazard of possible shorting where the equipment under test has exposed metal parts.
- Avoid using the instrument if it has been exposed to rain or moisture or if your hands are wet.
- Do not exceed the maximum allowable input of any measurement range.
- Never open the battery compartment cover when making measurement.
- Do not use the instrument if there is any damage to the casing or when the casing is removed.
- Do not turn the Function Selector switch with plugged in test leads connected to the circuit under test.
- Do not install substitute parts or make any modification to the instrument. Return the instrument to Yokogawa M&C or your distributor for repair or re-calibration.
- Always switch off the instrument before opening the battery compartment cover for battery replacement.

WARNING

To avoid damage to the instrument or electric shock! The restrictions on the maximum voltage level for which the CL130/CL135 testers can be used, depend on the over-voltage categories specified by the safety standards. These category specifications are formulated to protect operators against transient impulse voltage in power lines.

Model	Function	Maximum Allowable Input
		OVERVOLTAGE CATEGORY III
CL130	~ A, ~ V	600A AC Measuring circuit voltage : 600Vrms AC
CL135	~ A, ~ V	600A AC Measuring circuit voltage : 600Vrms AC

Over-voltage category I (CAT.I):

Signal level, special equipment or parts of equipment, telecommunication, electronic etc., with smaller transient over-voltages than CAT.II.

Over-voltage category II (CAT.II):

Local level, appliance, portable equipment etc., with smaller transient over-voltages than CAT.III.

Over-voltage category III (CAT.III):

Distribution level, fixed installation, with smaller transient over-voltages than CAT.IV.

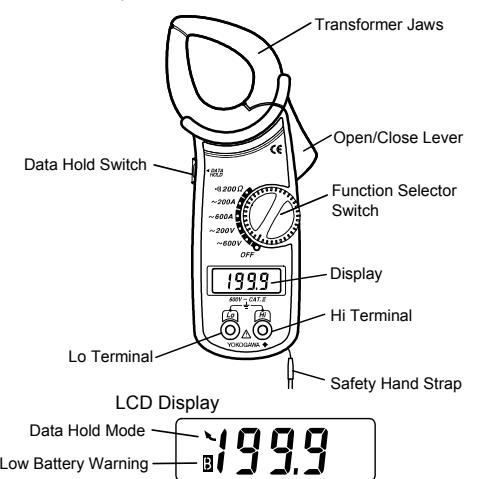
CAUTION

- Always make sure to insert each plug of the test leads fully into the appropriate terminal on the instrument.
- Make sure to remove the test leads from the instrument before making current measurement.
- Be sure to set the Function Selector switch to the "OFF" position after use. When the instrument will not be in use for a long period of time, Place it in storage after removing the battery.
- Use a damp cloth and detergent for cleaning the instrument. Do not use abrasives or solvents.

NOTE

- Radiation immunity affects the accuracy of CL130/CL135 testers under the conditions specified in IEC 801-3: 1984 (CL130)/IEC 801-3: 1993 (CL135).
- If equipment generating strong electromagnetic interference is located nearby, the testers may malfunction.

1. Instrument Layout



2. Measurement

2.1 Preparation for Measurement

- CAUTION**

 - The jaw section is a delicate, precision sensor. Do not subject the jaw to unreasonably strong shock, vibration, or force when using it.
 - If dust gets into the tops of the jaws, remove it immediately. Do not close the jaws when dust is trapped in its joints as the sensor may break.
 - Please check that the Function Selector switch is set to the desired position

2.2 AC Current Measurement

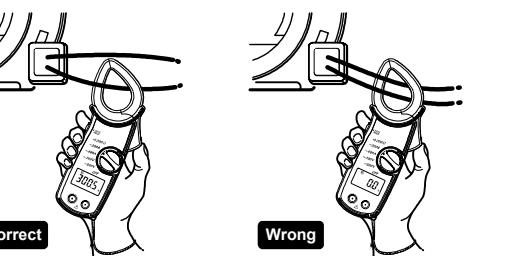
WARNING

Never use the instrument on a circuit above 600V AC. This may cause electrical shock hazard and damage to the instrument or the circuit under test.

- (1) Set the Function Selector switch to the " ~ 200A " or " ~ 600A " position.
- (2) Press the open/close lever to open the transformer jaws and clamp them onto a single conductor and take the reading on the display. The most accurate reading will be obtained by keeping the conductor at the center of the transformer jaws.

NOTE

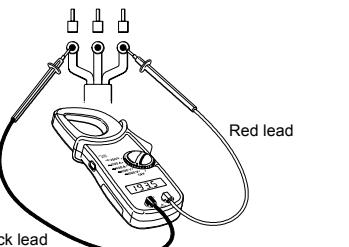
- During current measurement, keep the transformer jaws fully closed. Otherwise, accurate measurements cannot be taken. Maximum conductor size is 30mm in diameter.
- When measuring larger current, the transformer jaws may buzz. This is not a fault and does not affect the accuracy either.



2.3 AC Voltage Measurements

WARNING

Never use the instrument on a circuit above 600V AC. This may cause electrical shock hazard and damage to the instrument or the circuit under test.



- (1) Set the Function Selector switch to the " ~ 200V " or " ~ 600V " position.
- (2) Plug the red test lead into Hi terminal and the black test lead into the Lo terminal.
- (3) Connect the tip of the red and black test leads to the circuit under test and take the reading on the display.

2.4 Resistance Measurement and Continuity Check

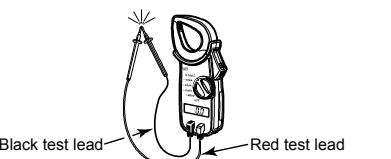
WARNING

Never use the instrument on an energized circuit.

- (1) Set the Function Selector switch to the " 200Ω " position.
- (2) Plug the red test lead into Hi terminal and the black test lead into the Lo terminal. Check that "1" (over indication) is indicated on the LCD display.
- (3) Short the tip of the test leads and check whether the display reads "0".
- (4) Connect the tip of the test leads to the circuit under test. If the resistance is 30.0Ω or less, the buzzer beeps.

NOTE

When shorting the tip of the test leads, the display may read a very small resistance instead of "0". This is the resistance of the test leads on the display.



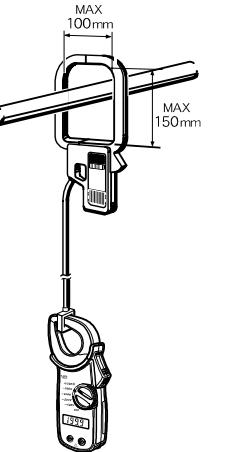
3. Other Functions

3.1 Data Hold Function

This is a function used to freeze the measured value on the display. Press the Data Hold button to freeze the reading. The reading will be held regardless of subsequent variation in input. "H" is shown on the upper right corner of the display while the instrument is in the Data Hold mode. To exit the Data Hold mode, press the Data Hold button again.

3.2 Optional Accessories

Clamp Adapter Model 99025 (For AC current measurement only)



Clamp Adapter Model 99025 is designed to increase the measuring capability of a clamp meter. With the use of the Clamp Adapter, you can not only extend current range over 3000A, but also clamp on a large bus-bar or conductor.

- (1) Set the Function Selector switch to the " ~ 200A " or " ~ 600A " position.
- (2) As shown in the figure below, clamp Model CL130/CL135 onto the pickup coil of Model 99025.
- (3) Clamp Model 99025 onto the bus-bar or conductor under test.
- (4) Take the reading on Model CL130/CL135 and multiply it by 10.

NOTE

For detailed specification, refer to the Clamp Adapter User's Manual.

4. Battery Replacement

WARNING

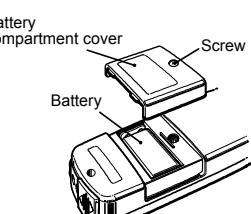
To avoid electric shock hazard, make sure to set the Function Selector switch to "OFF" and remove the test leads from the instrument before trying to replace battery.

CAUTION

Make sure to install battery in correct polarity as indicated in battery compartment.

If the battery voltage becomes too low for the instrument to operate normally, "B" is shown on the display. Then, replace the battery. Note that when the battery is completely exhausted, the display blinks without "B" shown.

- (1) Set the Function Selector switch to the "OFF" position.
- (2) Unscrew and remove the battery compartment on the bottom of the instrument.
- (3) Replace the battery observing correct polarity. Use a new 6LR61 (Alkaline battery) or 6F22 (Manganese battery).
- (4) Re-place and screw the battery compartment cover.



5. Specifications

Instrument Specifications

Measuring Ranges and Accuracy (at 23±5°C, relative humidity up to 75%)

CL130

Range	Frequency	Accuracy	Crest Factor
200A AC	50/60Hz	1.5% rdg +6dgt	sin
	40 to 1kHz	2% rdg +5dgt	↑
600A AC	50/60Hz	1% rdg +3dgt	↑
	40 to 1kHz	2% rdg +5dgt	↑
200V AC	50/60Hz	1% rdg +2dgt	↑
	40 to 1kHz	1.5% rdg +4dgt	↑
600V AC	50/60Hz	1% rdg +2dgt	↑
	40 to 1kHz	1.5% rdg +4dgt	↑
200Ω	—	1.2% rdg +4dgt	Beeps below about 30Ω

CL135

Range	Frequency	Accuracy	Crest Factor
200A AC	50/60Hz	1.5% rdg +4dgt	≤3
	40 to 1kHz	2% rdg +5dgt	sin
600A AC	50/60Hz	1.5% rdg +4dgt	≤3
	40 to 1kHz	2% rdg +5dgt	sin
200V AC	50/60Hz	1% rdg +2dgt	≤3
	40 to 1kHz	1.5% rdg +4dgt	sin
600V AC	50/60Hz	1% rdg +2dgt	≤3
	40 to 1kHz	1.5% rdg +4dgt	sin
200Ω	—	1.2% rdg +4dgt	Beeps below about 30Ω

Conversion method : AC coupled, true rms responding, calibrated to the rms

■ General Specifications

- Operating System : Dual integration
- Measurement Function : AC current, DC current, Resistance, Continuity check
- Display : Liquid crystal display with maximum counts of 1999
- Overrange Indication : "1" is displayed on the highest digit.
- Response Time : Approx. 1 second (approx.2 seconds on resistance range)
- Temperature and Humidity for Guaranteed Accuracy : 23°C ±5°C, relative humidity up to 75% without condensation
- Operating Temperature and Humidity : -10 to 50°C (without condensation)
 - up to 30°C, 90% relative humidity
 - up to 40°C, 75% relative humidity
 - up to 50°C, 45% relative humidity
- Storage Temperature and Humidity : -20 to 60°C, relative humidity up to 75% without condensation
- Effect of conductor position :
 - CL130 Within 2% of indicated value at the center to a 10 mm-dia conductor carrying 100A, at every part inside the jaws
 - CL135 Within 3% of indicated value at the center to a 10 mm-dia conductor carrying 100A, at every part inside the jaws
- Effect of external magnetic field : 2 A or less in AC magnetic field of 400 A/m
- Power Source : 6F22(9V DC) or equivalent battery
- Battery Life : Approx. 200 hours (continuous)
- Current Consumption : Approx. 2mA
- Withstanding Voltage : 5550V AC for 1 minute between housing case and metal part of jaws
- Insulation Resistance : 10MΩ or greater at 1000V between housing case and metal part of jaws
- Conductor Size : Approx. 3